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American Standards Association

ASA Member-Bodies

Am. Gas Association
Am. Home Economics Assn.
Am. Institute of Bolt, Nut & Rivet Mfrs.
Am. Institute of Elec. Engineers
Am. Institute of Mining & Metallurgical Engineers
Am. Iron & Steel Institute
Am. Petroleum Institute
Assn. of American Railroads
Am. Soc. of Civil Engineers
Am. Soc. of Mechanical Engrs.
Am. Soc. of Sanitary Engineering
Am. Soc. for Testing Materials
Am. Transit Association
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Technical Committees
Cast Iron Pipe Research Assn.
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Edison Electric Institute
Fire Protection Group:
Associated Factory Mutual Fire Insurance Companies
Nat. Bd. of Fire Underwriters
Nat. Fire Protection Assn.
Underwriters' Laboratories
Institute of Radio Engineers
Light Metals Group:
Aluminum Company of America
Mfrs. Standardization Soc. of the Valve and Fittings Industry
Nat. Assn. of Master Plumbers
Nat. Assn. of Mutual Casualty Companies
Nat. Bureau of Casualty and Surety Underwriters
Nat. Electrical Mfrs. Assn.
Nat. Machine Tool Builders' Assn.
Nat. Safety Council
The Panama Canal
Soc. of Automotive Engineers
Telephone Group:
Bell Telephone System
U. S. Department of Agriculture
U. S. Department of Commerce
U. S. Department of Interior
U. S. Department of Labor
U. S. Govt. Printing Office
U. S. Navy Department
U. S. War Department

Associate Member-Bodies

Am. Hospital Association
Am. Water Works Association
Brick Manufacturers Assn. of America
Grinding Wheel Mfrs. Association
Illum. Engineering Society
Internat. Acetylene Association
Library Group:
Am. Library Association
Special Libraries Association
Radio Mfrs. Assn.
Soc. of Motion Picture Engrs.
U. S. Machine Screw Serv. Bur.

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Chaos in Building Codes Offers Challenge to Standards Movement

National Bureau of Standards Survey Shows Some Cities Have Codes Written More Than Thirty Years Ago

Building Owners, Material Suppliers, Architects, Builders and Public Interests Report Confusion in Obsolete Regulations

A BUILDING in the process of construction often invites the passerby to pause a moment and watch the drama that is taking place. The steam shovel scooping up earth, the steel erector working on a thin skeleton high in the air, and many other phases of building construction stir the imagination. What the passerby does not see is the off-stage play that makes the building a safe and sanitary place for him to occupy.

Building construction is controlled by ordinances ordinarily referred to as building codes. These regulations are not a new idea. Hammurabi, king of Babylon about 4000 years ago, was one of the first men to make buildings safe for the public. He passed a few simple laws providing that if a house collapsed and killed the owner, the contractor was to be put to death. The square foot price for buildings and the wage scale for mechanics was also established in his laws.

History traces for us the developments in building regulation in Egypt, Greece, Rome, and especially in England during the 17th and 18th centuries. In the United States the need for building regulation was established about 300 years ago. In 1630 a house burned in Boston. Sparks from it set fire to a neighboring house so that it, too, burned down. The Governor then said, "We have ordered that no man shall build his chimney with wood, nor cover his house with thatch." This was readily assented to.

1703 Brick Size Law

In 1703 the New York Colony passed an act making the size of brick 9 x 4 x 2½ inches and later amended this so that illegal size brick were forfeited to the Hospital of New York. Before 1775 New York had also passed an act entitled, "An Act for the Regulation of Buildings and the Prevention of Fires." Fire limit ordinances such as this one, and the many others which later developed, form the background for the present day building code.

Today the age of a building code is some indication of its effect on construction. Obviously, if a building code in force today was written in 1901, it lags far behind the rapid advance made in construction since that time. Some authorities believe that any code over ten years old should have a thorough investigation to determine if changes cannot be made in it that will reduce construction costs without detracting from safety standards.

Interest in Codes Is Widespread

Under the complex legislative system in this country questions like the actual number of building codes in existence, whether they are state or municipal, their age, whether or not they are being revised, what features in them are being revised, and similar data become extremely important to those responsible for the safety and health of the public. Architects, engineers, building owners, material manufacturers, and many others sooner or later come in contact with the building code and should be interested in its status.

For several years the National Bureau of Standards has sent out questionnaires to municipalities of 2500 population and over, asking for information concerning building and plumbing regulations. The latest survey of municipal building codes has recently been completed and the information obtained is now available in Letter Circular LC377 entitled, "Status of Municipal

Building Codes (Revised to March 15, 1935)." A description of the information contained in this circular is contained in the following introduction to it:

Purpose of Publication

"The information presented in this letter circular has been gathered primarily for use in connection with work going on at the National Bureau of Standards in the interest of sound building regulations. The Bureau cooperates with states and municipalities in the solution of code problems. Much of its experimental work on strength of building materials, fire resistance, plumbing, and other subjects finds direct application in building codes.

"Experience has shown that the information is useful to local committees, building officials, and others as well as to the Bureau. Often a building code committee of one municipality is unaware that another committee in a similar municipality is encountering the same problems or has recently dealt with them. Agencies studying the general problem of bringing about greater uniformity in building regulations are interested in learning how far requirements in current use appear to be lagging behind advances in the building art and what subjects are most actively undergoing change.

"This circular has been found to facilitate interchange of information and to assist in other ways the growing number of persons who wish to familiarize themselves with methods, progress, and experience in the building code field. Through study of the facts presented it is possible to obtain a comprehensive view of the situation existing today.

Source of Information

"The information of the report is based on answers to questionnaires received early in the current year. These questionnaires were sent out to municipalities of 2500 population and over and were addressed to building inspectors, city clerks, and others from whom it was thought authentic information could be obtained.

"In some cases where replies were not received, or appeared to be inconclusive, information obtained from previous surveys or from reference to codes has been inserted in parentheses.

Dates of Codes

"Those to whom the questionnaires were sent were asked to give the year when the code now in use was adopted or revised throughout. Minor amendments take place frequently in codes but they have not been considered to change the date of the code itself for the purpose of this tabulation. It should be noted that rather frequently the date given on a code is the date of printing, rather than the date of adoption, as given in this tabulation.

"The age of a code is some indication of how far it has fallen behind new developments, but frequent minor revisions may have kept it fairly up to date even though a general overhauling may not have taken place for a number of years. Only close inspection can determine this."

Based on the reported last date of adoption or complete revision, 160 codes are 20 or more years old; 165 are from 15 to 20 years old; 317 are from 10 to 15; 620 are from 5 to 10, and 371 are less than 5 years in age. In addition, there are 946 municipalities that report they have no local building code. This does not necessarily mean that building is unrestricted, as there are a number of cases where state laws apply.

Many cities reporting the use of a state code might be added to the number reporting none, on the ground that there is no local code in effect. This has not been done because in some states cities have formally adopted state codes, thus making them their own, while in others the state code applies although not locally adopted. A later publication will discuss the situation with respect to state codes in detail.

Sound Building Codes Protect Life, Property

A building code tends to insure public safety and health by providing:

Safeguards against structural damage or collapse;

Adequate protection against fire;

Adequate means of egress;

Health and safety regulations such as those for light and air, plumbing, and those for mechanical appliances with which such buildings are equipped.

Past events have clearly demonstrated that failure in any of these fundamental requirements means death or serious injury, and more or less serious loss of property.

Some 181 municipalities have fire limit ordinances requiring the use of fire-resistive construction within certain designated areas. Altogether, 3173 municipalities were covered. A small number failed to reply.

Revision of Codes

"The question in this case was whether work was actively under way on a fairly complete revision. Some cases have, however, been recorded where amendments not of major character but of considerable general interest have been reported.

"In order to establish what subjects were requiring most attention in revision work, a question was asked as to the principal changes made in revision now going on or recently completed. The most practicable method of indicating these subjects in this tabulation appeared to be to give them an identifying number and then explain the numbering elsewhere. Accordingly, each major subject has been assigned a particular number and a key to this system will be found on the last page. In 192 cases such revision was indicated as in process while 26 others reported the drafting of a new code and 34 reported that revision was contemplated."

This birdseye view of the status of building codes is extremely important in its relation to the present field of standardization. It is hard to imagine the automotive industry making automobiles to meet varying standards in all 48 states as well as innumerable variations of these standards by each municipality in any given state. To build an automobile today in line with 1901 standards for such a vehicle would provoke laughter. Yet an analysis of building codes indicates that in a number of cities building construction must conform to standards of this age. A search into the provisions of many of the existing codes has also shown inconsistencies and variations beyond any technical reasons.

Sperm Oil Exit Lamp

The following requirement for emergency exit lights in theaters is in effect today in at least one city: "Lights Over Exits—There shall be one light within a red lantern burning sperm oil, placed over each exit opening on the audience side of the wall." Perhaps this particular requirement is not being enforced, but it could be.

The function of a building code should be thoroughly understood. It gets its life through the police power of the state. Specifically the building code tends to insure the public safety and health by:

(1) Providing safeguards against structural damage or collapse;

(2) Providing adequate protection against fire;

Many Codes Lag Behind Newer Building Methods

The age of a building code has a definite effect upon building construction. Some codes were written as far back as 1901, when today's methods of construction were unknown, the National Bureau of Standards survey shows.

An analysis of this study shows that building construction in a number of cities must conform to regulations written more than thirty years ago.

(3) Providing adequate means of egress; and

(4) By providing health and safety regulations such as those for light and air, plumbing, and those for mechanical appliances with which buildings are equipped.

Past events have clearly demonstrated that failure in any of these fundamental requirements means death or serious injury to persons and more or less serious loss of property.

The Value of Codes

Codes achieve their purpose by providing for the proper use of materials, the strength of materials, allowable live loads, allowable heights, areas, and occupancy of buildings, and a host of other details.

To maintain the necessary balance in so complex a field as that covered by the building code it becomes apparent immediately that its provisions should be written with absolute fairness to the manufacturers of building materials, that they should insure freedom in design and construction, and that they should recognize the problems of the building official. All these features must be secured without in any manner lowering building standards as they affect public safety.

The situation in the building code field today, in part brought out by the survey of existing codes, has been described as little short of chaotic (see also INDUSTRIAL STANDARDIZATION, October, 1933). It offers a direct challenge to the best efforts of standardizing bodies.

Special Committee on Building Codes Recommends Correlating Committee

Standards Council Will Act on Report of Committee at Next Meeting

Definite plans for carrying forward work on building codes under American Standards Association procedure were formulated by the Special Committee on Building Codes on March 21. The committee approved the recommendations of the subcommittee, named to write the plan of procedure.

Several months ago, this committee was organized to recommend some suitable method of conducting work in this field in accordance with an agreement between the Department of Commerce and the ASA, at the request of Secretary Roper. It was agreed that the work heretofore carried on by the Department of Commerce Building Code Committee should be continued by the ASA with the cooperation of the National Bureau of Standards.

The committee voted to recommend to Standards Council the formation of a correlating committee to formulate a comprehensive program and to supervise continued development in the building code field. The proposed correlating committee was modeled after the Safety Code Correlating Committee of the ASA, which has been supervising the wide national safety code program for several years.

The committee's report provides for the appointment of such sectional committees as may be found necessary for preparing recommendations concerning phases of the proposed building code not covered by sectional committees which are now functioning. These will be organized from time to time, at the discretion of the correlating committee, as needed.

J. C. Irwin, Chairman of Standards Council, presided and representatives of the following groups attended the meeting:

American Institute of Architects
American Municipal Association
American Society of Civil Engineers
American Society for Testing Materials
Building Officials' Conference of America
Construction League of the United States
National Board of Fire Underwriters
National Bureau of Standards
National Fire Protection Association

Members of the drafting subcommittee who wrote the report which received approval by the Special Committee on Building Codes were R. P. Miller, R. E. Hess, and G. N. Thompson.

Ainsworth Is Member of Labor Advisory Committee

Cyril Ainsworth, assistant secretary of the American Standards Association, has accepted membership on a special advisory committee of the United States Department of Labor which will consider matters pertaining to industrial safety and health. Miss Frances Perkins, Secretary of Labor, issued the invitation to Mr. Ainsworth to serve on the committee.

Others who are members of the committee are: John Fry, American Federation of Labor; Wesley M. Graff, National Bureau of Casualty and Surety Underwriters; Dr. R. R. Sayers, U. S. Public Health Service; Thomas P. Kearns, Industrial Commission of Ohio; W. H. Cameron, secretary and managing director, National Safety Council.

The committee will act as an advisory board to the Division of Labor Standards of the U. S. Department of Labor, of which V. A. Zimmer is the director, in working out recommended standards of health and safety in industry. Mr. Zimmer expects to be available to assist various states in their efforts to improve their industrial safety and health laws, rules and regulations; also to help other federal departments and bureaus in handling their industrial safety and health problems in so far as such matters come within their jurisdiction.

To assist in the work of the Division of Labor Standards, Paul F. Stricker has been named safety engineer of the Division. Mr. Stricker will work closely with the advisory committee.

Blaisdell Heads Consumer Work of Emergency Council

Thomas C. Blaisdell, Jr., formerly executive director of the Consumers' Advisory Board of the NRA, has been appointed director of the consumers' division of the National Emergency Council, Washington.

A.S.T.M. Publishes Revision of Standards on Refractory Materials

In addition to all of the 21 specifications, test methods, and definitions standardized by the American Society for Testing Materials through the work of its Committee C-8 on Refractories, the newly revised A.S.T.M. publication, *Standards on Refractory Materials*, includes the Manual on Interpretation of Refractory Test Data, detailed information on the standard samples of type refractory materials, and reports of extensive industrial surveys showing the service conditions of refractories in outstanding consuming industries.

The specifications cover clay fire brick for various uses, refractories for the construction of incinerators, ground fire clay, and quicklime and hydrated lime for the manufacture of silica brick.

Included in the standard methods of testing are: porosity and volume change, particle size of ground materials, panel test for resistance to thermal and structural spalling, permanent linear change, test under load at high temperature, softening point, high-temperature heat insulation, and chemical analysis of refractory materials.

Accurate investigation of refractory materials is difficult unless competent methods are used to analyze and report the groups of data developed. The Manual on Refractory Test Data, which is given, evaluates the methods of interpretation. First issued in 1932, the current Manual is extensively revised and simplified.

To help maintain accuracy in the chemical methods of analysis, a series of standard samples of type refractory materials has been developed in cooperation with the National Bureau of Standards and a large number of laboratories. The composition of these samples is given in tabular form.

Copies of this publication, 143 pages, in heavy paper cover, can be obtained from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, or through the ASA office, at $1.00 per copy. Special prices are in effect on orders for ten or more copies.

Crop Protection Official Asks Standard Fumigants

Accurate standardization of a fumigant by the manufacturer should be required by the purchaser, W. C. O'Kane, chairman, Board of Governors, Crop Protection Institute, said in an address before the Food Section at the Twenty-Third Annual Safety Congress.

"If the manufacturer is not equipped to provide a standardized product, the buyer can never know just what he is getting," Mr. O'Kane said. "If the material that he purchases varies in quality of strength he can not know that the chemical he has purchased will give satisfactory or safe results.

"Since fumigation of large structures, such as elevators, or grain storage, or warehouses," he continued, "introduces specific problems with each type of structure, the manufacturer of a fumigant ought to be staffed and financed in such a way as to study the engineering problems involved and to work out satisfactory solutions. He ought to provide this in justice to the purchaser, as a necessary part of the intelligent and adequate merchandising of the chemical that he sells."—*From Safety Engineering, Feb. 1935.*

ASA Standards Council Will Meet on April 25

A meeting of the Standards Council, which is the final authority on approval of American Standards under the procedure of the American Standards Association, has been called for April 25.

The report of the special committee on Building Code will be considered at this meeting.

The departmentalization of the work of the Standards Council will also be on the agenda, as well as a suggestion for the organization of an advisory committee of experts on industrial diseases proposed by the Safety Code Correlating Committee.

Canada Standardizes Capacitors and Boxes

Specifications for Capacitors (Electrical Condensers) for Use in Suppressing Radio Interference, and for Outlet Boxes, are the twelfth and thirteenth specifications to be issued under Part II of the Canadian Electrical Code. The specifications outline conditions which must be met to secure Laboratory approval for the sale or other disposal and use of electrical equipment in Canada.

The Canadian committee cooperated with the electrical committee of the British Standards Institution, the Underwriters' Laboratories, and the Standards Committee of the National Electrical Manufacturers' Association in developing the specifications.

Allis-Chalmers Finds Savings In Company Standards Program

Early Work in Standardization Found Essential Because of Wide Range of Products

BECAUSE of the wide diversity of products manufactured by the Allis-Chalmers Manufacturing Company, standardization within the company has been of vital importance for 35 years.

Although four concerns were merged in 1901 to form this company, 11 corporations, or parts of companies, have been acquired since 1904. Among the products manufactured by the Allis-Chalmers Company today are hydraulic turbines; steam turbines; condensers; steam and gas engines; motors, generators, transformers, switchgear, conversion and electric railway equipment; pumps; blowers; compressors and vacuum pumps; texrope drives; crushing and cement, mining and metallurgical, flour and saw mill, power transmission and timber preserving machinery; farm and industrial tractors; agricultural and road machinery.

Standardization work in individual departments was carried on in the Allis-Chalmers Manufacturing Company from the time the company was formed in 1901. Each engineering department set up its own standards, and the manufacturing department compiled a list of stock items. This information was tabulated in 1910 by the maintenance department on tracing cloth, and blue prints were made, put into loose-leaf book form, and issued to all parties to whom this information was useful. As items were added or discontinued from active stock, the proper changes were made on the tracings and changed blue prints issued.

Standards Work Reorganized

In the period from 1910 to 1921 no organized standardization program was carried out. But in 1921, the president, recognizing the need for a definite organization for standardization work, appointed two committees to handle this work. One consisted of an engineer from each engineering department and the other of shop or manufacturing executives.

The engineering committee handled all engineering problems of standardization, subject to the approval of the department managers. The shop committee was to take care of the records of standard parts, issue all standard sheets, and standardize all detail of drawings, material specifications, and orders. This work was to be taken care of by a standardization secretary appointed by the general works manager. The blue-print Standards Book was kept up until 1925 when it became necessary to change this to a printed loose-leaf book.

In 1924, a secretary to the engineers' standardization committee was appointed, and gradually all standardization work, except the standardization of materials, was shifted from the shop committee to the engineers' standardization committee. This shifting has concentrated the bulk of the work in the secretary's office.

Engineers' Standards Committee

The engineers' standardization committee, as it is today, consists of 14 engineers from 12 engineering departments, the chief consulting engineer, the chairman of the managers' committee, a maintenance engineer, and a secretary. This committee is responsible for all standardization work in the engineering departments and works with the materials and shop committee on materials standardization. It is headed by a chairman, appointed by the managers' committee each year and he is responsible to the chairman of the managers' committee on all questions of company engineering standardization policy.

The materials and shop standardization committee is headed by the vice-president in charge of manufacturing, and consists of the chief consulting engineer, the manager of the purchasing department, the chief chemist, and assistant to the general works manager, the general materials supervisor, the chairman of the engineers' standardization committee, and the manufacturing department's research engineer, who acts as secretary of this committee. This group deals almost

entirely with standardization of materials and standardization work which concerns the manufacturing department only.

How Standards Are Developed

While there is no set procedure for the handling of standardization projects, most of them are handled in the following manner:

The need for standardization is called to the committee's attention at a meeting by either the secretary or some other member of the committee. The need is discussed and either a subcommittee is appointed to handle the work, or the secretary is requested to obtain all pertinent information.

If a subcommittee is appointed, the secretary works with them, obtaining all information they desire. An investigation is made of all existing standards or specifications which might pertain to the project. Where an existing standard covers the needs of the project this is presented to the committee to be considered for adoption as a Company Standard. A digest of all pertinent information is then made and, if necessary, a tentative draft of a standard is drawn up.

The digest or draft standard is then presented to the committee, for comments and criticism. If necessary, revisions are made and the project is again presented to the committee for adoption. When the manufacturing department is concerned, a copy is sent to the materials and shop standardization committee for approval.

Upon final adoption, the project is published in a *Book of Standards*, edited by the secretary of the engineers' standardization committee. Where projects affect the general policy of the company, a final approval is obtained from the managers' committee.

Book of Standards Printed

The *Book of Standards* referred to above is a loose-leaf volume of 588 pages. It is divided into four sections: A Table of Contents of 5 pages; a Standard Parts Section of 180 pages; an Engineering Data Section of 77 pages; a Shop Practice Section of 18 pages; and a Tool Section of 57 pages.

The Standard Parts Section contains a complete and up-to-date list of all finished parts and rough material carried in stock. These listings are continually being changed in order to meet the needs of the various departments; although at the present time an effort is being made to reduce the number of items carried in stock and so reduce the inventory cost.

The Engineering Data Section contains some standard engineering information which may be found in any handbook, references to American Society for Testing Materials standards which apply to raw materials used by the company, special material specifications covering material not under any other general specification, special engineering information pertaining to our products which have been developed by our engineers, and a drawing standard section.

The Shop Practice Section consists of standard shop practices which are given to guide designers in designing machinery.

The Tool Section contains a list of all standard and special tools, such as thread taps and dies, taper reamers, broaches, test heads, etc. This section is also used by the designers as a guide.

There are now 247 of these *Books of Standards* in use in the engineering and manufacturing departments. This book is used by all of the engineering departments when designing new machinery or improving old designs, so that standard parts, sizes, and kinds of materials used may be kept at a minimum. A reference is made on the drawing to standard parts and materials. All standard parts are given a stock number and also a standard drawing number. These numbers appear in the *Book of Standards* and identify the part.

Inspectors Use Standards

The inspection department inspects all materials for conformity to the material specifications and dimensional standards shown in the Engineering Data Section. These specifications and standards are checked with the latest information and standards, as published by the American Standards Association, the A.S.T.M., etc. Because the *Book of Standards* is loose-leaf and the pages are set up in monotype, it is a simple matter to revise the pages as necessary.

Allis-Chalmers Checks Materials to Standards

The Allis-Chalmers *Book of Standards* makes available to all departments the company's standards and specifications decided upon by the Engineers' Standardization Committee and the Materials and Shop Standardization Committee.

The *Book of Standards* also contains general materials specifications and dimensional standards checked with the latest practice as approved by the national engineering standards organizations and by the American Standards Association. All materials are inspected for conformity to these specifications and standards.

The savings which have been made under this standardization program are large and its success in the years that it has been operating have upheld the company's expectations. They realize that standardization is very much worth while and will continue to support the work as enthusiastically in the future as they have in the past.

ASA Library Has Four Oxy-Acetylene Pamphlets

The International Acetylene Association recently published four pamphlets on the uses of oxy-acetylene, which are now in the American Standards Association Library. A survey of welding codes and specifications is given in one of the pamphlets, which includes welding rules given in the A.S.M.E. Boiler Construction Code, the A.P.I.-A.S.M.E. Unfired Pressure Vessel Code, and in the U.S. Marine Boiler Code

A summary of the proposed ASA Pressure Piping Code which is being prepared under the sponsorship of the American Society of Mechanical Engineers is included. In addition to rules and specifications for welding, the pamphlet includes welding symbols and specifications to cover ferrous and non-ferrous materials.

The other three pamphlets are on Oxy-Acetylene Cutting, Oxy-Acetylene Welding and Its Applications, and Miscellaneous Uses of the Oxy-Acetylene Flame.

The pamphlets are available from the International Acetylene Association, 30 East 42nd Street, New York, or from the American Standards Association.

Confusion Reigns Where Time Has No Standard

We are so used to a uniform system for indicating the passage of our 24 hours that we accept our "standard time" without realizing that it is one of the oldest examples of nation-wide standardization. The experience with a time convention was the first step in the progress by which our railroad systems have for more than half a century been applying the principle of standardization to an increasingly long list of materials and services.

By 1872 the need for time standardization had become urgent, and in 1883 the railways agreed to conform to one time system instead of the more than 50 previously followed.

Some of us may have heard tales of the resentment against this, and of the confusion that reigned while local time and railroad time were both used in the same community. For instance, when the Maine Central, under President Tucker's regime, adopted the standard time, working men were loathe to begin their day almost an hour earlier than before and made biting remarks about "God's time and Payson Tucker's time."

Those of us who take summer motor trips in the parts of New England where in the course of a day one runs back and forth between daylight-saving and standard time, are caught in a similar confusion; and as we try in vain to reckon where or when we'll pick up the next meal, we recognize another illustration of the practical value of this standardization business.—*Journal of Home Economics, February, 1935.*

New Zealand Industry Finds Progress Requires Standards

Despite the embryonic condition of industrial organization in New Zealand, standardization is assuming increasing importance in relation to industrial development.

Of utmost importance to Empire trade, says the *New Zealand Standards Institution Bulletin*, December, 1934, is precise knowledge concerning products of industry which are needed for interchange. National specifications provide prospective purchasers with this information, and tend to bring about an organized effort to obtain and to maintain the required quality of such products.

Perhaps of fundamental importance is that aspect of standardization which, dealing with definitions, qualities, and methods of test, enables buyer and seller to speak the same language. At present, in the case of innumerable commodities in common use, this is very far from being the case.

The New Zealand Standards Institution has organized its work under Industry Divisions. Although the Engineering and Electrical Engineering Industries are substantially represented by national federations in the corresponding Divisions of the N.Z.S.I., the important range of industries included in the Building Division are far less adequately organized. The British Standards Institution includes on its Building Divisional Council representatives of the Cement Makers' Federation, the Federated Quarry Owners, the Ballast Sand and Allied Trades' Association, the Central Association of the Lime and Limestone Industry, and the National Federation of Clay Industries, but in New Zealand the Cement Makers' Association is the only one in this field which has a national organization similar to these British organizations.

A more comprehensive membership policy on the part of the New Zealand Manufacturers' Federation is suggested by the New Zealand Stand-

ards Institution as a possible solution which would result in accepted standards of quality and practice, and general coordination of industrial policy in New Zealand.

Wallace Named Director Of Equipment Research

The Research Advisory Board of the Association of American Railroads has named Lawrence W. Wallace, vice-president of the W. S. Lee Engineering Corporation, Washington, D. C., as director of equipment research. He will have charge of all research work relating to motive power and car equipment, both freight and passenger, and succeeds Harley A. Johnson of Chicago, who resigned to devote his entire time to the Chicago traction interests.

In addition to having had considerable experience in dealing with the problems of the railway mechanical department, his work as secretary of the American Engineering Council has given him an excellent training in the promotion and administration of large projects in engineering research; moreover, his contacts with legislators and public officials have made necessary a broad training in diplomatic approach in the handling of difficult problems.

Mr. Wallace studied mechanical engineering at the Agricultural and Mechanical College of Texas, graduating in June, 1903. In 1906, he became a member of the faculty in the mechanical engineering department at Purdue University, serving specifically as assistant in railway mechanical engineering. He remained at Purdue until June, 1917, and was for several years professor of railway and industrial management, and in charge of all railway mechanical work. From June, 1917, to March, 1919, Mr. Wallace was assistant general manager of the Diamond Chain & Manufacturing Company, Indianapolis, Ind. He left that company to become director of the Red Cross Institute for the Blind, at Baltimore, Md.

In January, 1921, Mr. Wallace became secretary of the American Engineering Council, then known as the Federated American Engineering Societies. He remained in this capacity until 1934, when he became vice-president of the W. S. Lee Engineering Corporation, in charge of its Washington office.

Wood-Preservers Association Revises Creosote Standards

The American Wood-Preservers Association, at its annual convention in January, adopted revisions to its Standard Specifications for Creosote Oil for Ties and Structural Timbers and to its Specifications for Cresote-Coal-Tar Solution for Ties and Structural Timbers.

The revisions provide for the withdrawal of grades 2 and 3 creosote oil from the creosote specifications, as well as the withdrawal from the creosote-coal-tar specifications of a footnote which placed certain limitations on the use of that preservative which are no longer applicable.

The adoption of the revisions brings the specifications of the American Wood-Preservers Association, the American Railway Engineering Association, and the American Society for Testing Materials into agreement.

Spanish Standards Commission Joins International Association

The national standardizing body in Spain, Comisión Permanente de Ensayo de Materiales y de Tipificación Industrial, has become a member of the International Standards Association. The organization of the Comisión was announced in the December, 1934, issue of Industrial Standardization and Commercial Standards Monthly.

With the Spanish body, the International Standards Association has 19 member-bodies, including the American Standards Association.

Delegates of the Spanish association attended the ISA meetings held in Stockholm in September, 1934.

British Standardize Solvents for Paints

Eight British Standard Specifications for solvents for paints were issued recently by the British Standards Institution, in addition to those already set up in the comprehensive series of standards for solvents which the Institution is now developing.

The new specifications cover Diethyl Phthalate, Dibutyl Phthalate, Technical Ether, Carbon Tetrachloride, Hexachlorethane, Trichlorethylene (Technical and Stabilized), and Technical and Glacial Acetic Acid.

The specifications for solvents are being prepared by the Technical Committee of the Chemical Division of the B.S.I., of which Dr. Vargas-Eyre of the Distillers' Company is chairman.

Copies of the specifications are available from the office of the American Standards Association.

New S.A.E. Steel Data Embody Wide Engineering Significance[1]

by

F. P. Gilligan

Chairman, Iron and Steel Division Standards Committee, Society of Automotive Engineers

Thirty Years of Work by Automotive Engineers Marks Milestones of Steel Specifications

NEARLY thirty years ago a group of automobile engineers, known as the Mechanical Branch of the Association of Licensed Automobile Manufacturers, engaged the late Henry Souther as consulting metallurgist and called into conference several steel mill representatives to discuss the need for chemical specifications for a limited group of steels that would be suitable for the construction of the various automobile parts.

At that time the commercial structural steels were chiefly of the carbon steel type and were quite generally sold on the basis of physical properties in the condition as delivered to the purchaser. Alloy steels were merchandised under trade names and each producer used an analysis that differed slightly but significantly from his competitor's.

The art of heat treatment as applied outside the toolroom or blacksmith shop was in its infancy, and amidst the known and unknown variations in the steels used and the frequency absence of pyrometers on furnaces difficult to control, the engineer and the production departments were almost continually in hot water—which may explain why so many shop executives were considered "hard boiled" in those days. Consequently, when the automobile engineer of that day desired to change his source of supply he had reason to hesitate lest his last state be worse than his first.

Steel Companies Cooperate

The steel companies, having considerable ordnance and tool steel experience, recognized the problem that confronted the automobile engineer and willingly cooperated in the development of a group of chemical specifications for both carbon and alloy steels which enabled the engineer to exercise some choice in the type of steel used and in the range of physical properties produced by suitable heat treatment. They also assisted in the preparation of recommended methods of heat treatment.

That group eventually developed into the S.A.E. Iron and Steel Division, and its first report under that title was published in 1911. It covered seven carbon and eleven alloy steels. In 1912 the S.A.E. numbering system for steel was adopted, and in 1915 the first physical property charts for S.A.E. steels were published.

Have International Recognition

It is very doubtful if even the most ardent enthusiast in the group that initiated this standardization work on steels ever dreamed the day would come when, to satisfy the demands of the users of these specifications, over 100 chemical compositions would be known as S.A.E. steels, or that the users would extend to practically every field of steel consumption where heat treatment is an essential part of the production process. The same art of heat treatment that brought these steel specifications into existence has promoted their general use and made them a part of the daily language of every metallurgist and steel treater. As a result of this popularity, of their general appropriateness for all types of construction, and convenience of identification they enjoy both national and international recognition.

When the Iron and Steel Division began its revision in April, 1934, it had to give careful consideration to the new conditions established by the adoption of the Steel Code and it therefore arranged for the attendance of a considerable num-

[1] Society of Automotive Engineers *Journal*, April, 1935.

ber of representative steel users who were not directly represented on the Iron and Steel Division.

Both steel users and steel makers were invited to express themselves freely upon all questions pertaining to S.A.E. steel compositions and their relation to Steel Code practice. Out of such general discussion was developed a plan of action consistent with the long-established policy of the Iron and Steel Division—namely, to provide for its membership and the users of its specifications steels that were technically adequate and commercially available.

Standards Conform to Code

The significance of the changes made may be summarized briefly. These specifications now cover the carbon range from 0.05 minimum to 1.05 maximum in the carbon series, with sufficient variation in the manganese and sulfur contents to meet the needs of nearly every type of steel user. The compositions standardized conform to the Steel Code requirements for each type, hence there is no necessity for any user to pay a special price because of non-standard limits.

In the alloy series a greatly increased and diversified list of compositions is provided, including heat-resisting and corrosion-resisting alloys. For every application the user has a wide choice as to type of alloy steel, range of physical properties, and material cost. No steel maker or alloy producer is subjected to discrimination. The engineer or designer has only to determine his service stress and other essential requirements, make his selection of acceptable steels, and leave the rest to the purchasing and metallurgical departments. This is in marked contrast with the early days of the automobile industry, when the engineer had to use a different composition every time he changed his source of supply.

The engineer or metallurgist who desires to select his steel upon the basis of physical values may begin with a plain carbon steel with a tensile strength around 45,000 lb per sq in. and gradually ascend the scale of strengths to the highest values, to 250,000 lb per sq in., or even higher, and have available a choice of two or more compositions every step of the way. Excellent alloy steels are now provided for the heaviest of automotive sections. Hence, the engineer or the metallurgist is not confined to a single type of steel or to a single supplier.

Factors of Quality

It is well understood at this late day that composition, as measured by the elements covered in these and other chemical specifications, is not synonymous with quality. The elements commonly included in specifications of this character enable the user and the maker to arrive at a common understanding as to the type and grade of steel desired. The particular quality a purchaser requires will depend upon additional factors that cannot be specifically defined in a general specification.

Special Tests, Extra Charges

In general, it may be stated that the quality the purchaser obtains will depend upon his own and his supplier's knowledge of the specific requirements, reinforced by such inspection requirements as he may impose. Of course, under the Steel Code, the imposition of special quality tests, as for example, the Ehn test as to grain size, or microscopic and macroscopic examinations, etc., necessitates the payment of certain standardized extras. It therefore behooves each steel user to identify and to establish in definite values or terms his particular engineering and metallurgical requirements, keeping in mind that a design which is poorly balanced or provides an inadequate factor of safety usually leads to the application of severe quality standards, with consequent purchasing penalties. Close cooperation with the steel maker will promote a common understanding of the essential facts and help avoid charges for unnecessary extras.

According to a prominent steel executive, this is an age of tailor-made steels. Such a state of affairs is not the ideal production schedule a steel maker ordinarily strives for. It is a condition bred by intensive competition arising from subnormal steel consumption and it is working to the advantage of the steel consumer from a quality standpoint. Competition is not now confined to the price field, it is a question of quality and service, hence we have the competition of one steel against another; of one alloy against an-

Revised Screw Thread Standard Is Up for ASA Approval

A proposed revision of the American Standard for Screw Threads for Bolts, Machine Screws, Nuts, and Commercially Tapped Holes, (Bla-1924) was submitted to the Standards Council of the American Standards Association.

The sponsors, who submitted the revision to the ASA, are the American Society of Mechanical Engineers and the Society of Automotive Engineers.

other, and finally, and most important, of the research facilities of one steel company against the research facilities of its competitor. Out of all this we are destined to have more steels before we have less.

Simplification, if it comes, will require the sympathetic interest and active cooperation of engineers and metallurgists in the steel consuming industries. There will be the need for them to supply precise information on the fundamental requirements of each type of steel as to service and manufacture, to supplement similarly unbiased data on economy of production and uniformity of quality to be provided by the steel maker, more facts and fewer opinions from both groups concerning the advantages and disadvantages of the various strengthening elements, with a general willingness to compromise upon a few steels rather than an insistence upon many.

Such simplification would eliminate unnecessary fashions in tailor-made steels, reduce inventories of makers and users, and in time lead to a substantial decrease in the varieties of steels, with consequent increase in the volume of approved types. Decreasing the varieties and increasing the volume is the usual route toward profits. Profits would not be unwelcome to the steel maker, and they should lead to advantages for the steel consumer.

English Standard Code of Colors Prevents Machine Tool Accidents

A standard code of nine colors to prevent accidents in the use of machine tools has been devised in England and proposed for international adoption. The idea is, for example, that all hand levers controlling the power supply shall be painted gray and marked with the symbol of an elephant feeding. Stop and start levers are to be painted red and marked with a symbol like the stop and start arms of a railway signal.

Levers that change the feed of raw material into the machine are to be painted a mottled green; those which change the speed, a mottled orange. The locking lever is to be painted brown and carry the symbol of a padlock. The reversing lever will be blue and carry an arrow showing the direction of reversal.

All levers controlling screw-cutting operations are to be painted mauve and will bear the symbol of a screw thread. Levers which control the shift of the machine by hand will be black, with a painted hand as symbol. Quick action levers intended to make similar shifts electrically or mechanically are to be painted cream color and will carry the image of a flying bird to indicate their speedy action.

Advocates of this color and symbol code claim that it will prevent many accidents due to wrong use of levers and that it will facilitate the instruction of new workers in the operation of the machine. This system can be readily understood by those who cannot read.—*National Safety News, March, 1935.*

New Federal Specifications Determine Government Purchases

The Director of Procurement, U. S. Treasury Department, announces that upon recommendation of the Federal Specifications Board, the following Federal Specifications will become effective for all future Government purchases of the items covered:

Hair-felt carpet and rug cushion C-C-811
Office Paste and paste brushes (Amendment 1) N-P-101a
Zinc-coated steel outlet-boxes with covers and accessories W-0-821
Mineral or rock-wool pipe-covering and cement HH-P-386
Grocers' Kraft paper bags UU-B-36
Driving-Journal lubricating grease VV-G-661
Fresh endive, escarole, and chicory HHH-E-516
Beet or cane sugar JJJ-S-791 (Amendment 3)

Copies of the Federal Specifications are available from the American Standards Association office, and from the Government Printing Office, Washington, D. C.

Propose Test for Impulse Strength Of Instrument Transformers

A proposal covering the testing of impulse strength of instrument transformers has been submitted to the American Standards Association by the American Institute of Electrical Engineers and has been referred to the Sectional Committee on Transformers for its consideration. It is expected that it will be included in the standards for instrument transformers now being prepared by that sectional committee.

Pennsylvania Studies Anthraco-Silicosis

The American Standards Association Library has received copies of Special Bulletin No. 41 on Anthraco-Silicosis issued by the Department of Labor and Industry of Pennsylvania. The Bulletin covers studies recently completed in the Anthracite Region of Pennsylvania by the U.S. Public Health Service.

Copies may be borrowed from the ASA Library.

Coal Classification Subcommittees Want Fuel Evaluation Plan

WELL-ATTENDED meetings of the Sectional Committee on Classification of Coal and its technical committees and subcommittees were held in New York February 19 and 20.

Subcommittee VI on Correlation of Scientific and Use Classification reported the completion of a series of seven charts listing all uses of coal, with the chemical and physical properties that are of importance in the selection of coal for any specific use. These charts are to be submitted to men best qualified to pass on the relative importance of the properties of coal for each use. These data will then be assembled to give in convenient form the properties of coal that should be given consideration in selection of coal for any particular use. These properties are to be evaluated to show their relative order of importance for each use.

Subcommittee V on Boundary Lines recommended that the boundary line of 77 per cent fixed carbon between the first and second groups of coal of the Bituminous Class, as given in the Tentative Specifications for Classification of Coals by Rank (A.S.T.M. D 388-34 T), be revised to 78 per cent fixed carbon. This proposed revision is considered to be a more suitable boundary line based on a statistical study of analyses of coals from various coal fields of the United States and on uses of coal for different purposes. It also represents the opinion of many coal technologists whose opinions were solicited by the subcommittee.

Subcommittee II on Origin and Composition of Coal and Methods of Analysis formulated principles to be adhered to in classifying coals according to type, such as common or bright, splint, cannel, and boghead.

Subcommittee VII on Defining Coal Sizes and Friability reported a proposed method for the determination of screen analysis of coal. This method covers specifications of testing screens, sampling procedure, and method of size testing. It applies to all size-testing of coal with the exception of anthracite, powdered coal as used in boiler plants, and crushed coal as charged into coke ovens. It was agreed to present this method of test to Committee D-5 on Coal and Coke of the American Society for Testing Materials for consideration as an A.S.T.M. tentative standard.

The Technical Committee on Nomenclature gave careful consideration to various suggested revisions of the names assigned to the different coal groups, as given in the present Tentative Specifications for Classification of Coals by Rank (A.S.T.M. D 388-34 T). The committee did not, however, recommend any changes in the present nomenclature.

Wide Representation on Coal Classification Committee

Members of the sectional committee which is considering standard classification methods for coal are:

Chairman, *A. C. Fieldner,* American Society for Testing Materials
Vice Chairman, *H. J. Rose,* American Institute of Mining and Metallurgical Enginers
Secretary, *C. B. Huntress,* Appalachian Coals

American Society for Testing Materials (Sponsor), *A. C. Fieldner*
American Ceramic Society, *W. H. Fulweiler*
American Chemical Society, *H. H. Lowry*
American Gas Association, *W. Cullen Morris*
American Institute of Mining and Metallurgical Engineers, *Harold J. Rose*
American Mining Congress, *Warren R. Roberts, Dr. Henry Mace Payne (alt.)*
American Society of Mechanical Engineers, *F. R. Wadleigh*
American Transit Association, *H. A. Kidder, Arthur E. Ellis (alt.)*
American Wholesale Coal Association, *E. H. Zimmerman*
Anthracite Institute, *E. W. Parker, R. H. Buchanan (alt.)*
Association of State Geologists, *Geo. H. Ashley, Harold E. Culver, F. H. Reed, G. H. Cady (alt.)*
Coal Mining Institute of America, *W. E. Fohl*
Electric Light and Power Group, *S. B. Flagg, Alexander Maxwell (alt.)*
International Railway Fuel Association, *Malcolm Macfarlane*
National Association of Purchasing Agents, *T. W. Harris, Jr.*
National Coal Association, *H. N. Eavenson, H. M. Ferguson*
National Research Council, *Taisia Stadnichenko*
National Retail Coal Merchants Association, *Chas. B. Johnson*
Southern Ohio Pig Iron and Coke Association, *D. J. Demorest*
U. S. Department of Interior, Bureau of Mines, *C. P. White*
U. S. Department of Interior, Geological Survey, *T. A. Hendricks*
Members-at-large, *S. P. Burke, R. E. Gilmore, E. A. Holbrook, Charles O'Neill*

A.S.T.M. Committees Approve Standards and New Projects

Project Committees of American Society for Testing Materials Report Important Scientific Progress in Test Methods and Specifications for Wide Range of Materials

TWENTY-NINE committees held meetings in connection with the A.S.T.M. Group Meetings of Committees in Philadelphia, March 4 to 8, inclusive. Proposed standards were offered by the committees, and specifications and test methods which have been in the tentative stage were recommended for adoption as standard. Several new committees will be organized as a result of actions taken by the standing groups. These new committees will undertake research to develop adequate data on which to base needed specification requirements.

Committee A-1 on Steel voted to revise the specifications covering Open-Hearth Carbon-Steel Rails (A 1-30) to include details of drop testing equipment and definite descriptive revisions covering "O" and "M" positions. This information is considered important because of the wide use of this standard in export trade.

Changes will be incorporated in the standard A 49-21, covering Quenched High-Carbon-Steel Splice Bars, to bring the chemical and physical properties in conformity with railroad specifications.

Tentative Standards for Bars

A proposed specification covering axle steel concrete reinforcement bars was approved, with a request that it be issued as a 1935 tentative standard. The requirements cover plain and deformed, in three grades, structural steel, intermediate and hard bars. The bars are to be rolled from carbon-steel axles for cars and locomotive tenders.

As a result of work extending over two years, Subcommittee IX recommended that proposed specifications covering carbon-steel still tubes for refinery service be published as tentative.

A combined meeting of subcommittees on chemical analysis, of several of the A.S.T.M. committees dealing with ferrous metals, resulted in the approval of the formation of a new standing committee to cover chemical analysis of metals. Extensive proposed revisions in the chemical determination of carbon, manganese, copper, sulfur, and silicon were reviewed, and submission of these to the Society is anticipated shortly, as soon as minor items can be worked up. This work anticipates the consolidation of A.S.T.M. methods of analysis of ferrous metals in one specification.

Important revisions in the Standard Specifications for Commercial Quality Hot-Rolled Bar Steels (A 107-33) and Commercial Cold-Finished Bar Steels and Cold-Finished Shafting (A 108-33) involve the revision of S.A.E. grades and the classification of flat hot-rolled steel. The recommendations provide for the adoption of carbon steel and free-cutting steel compositions soon to be announced by the S.A.E., with the retention of S.A.E. grade numbers as a measure of cooperation with this society.

The Subcommittee on Welding recommended that the specifications for high-tensile-strength carbon steel plates, A 149 and A 150, be included in the list of steels suitable for welding.

Committee A-2 on Wrought Iron has completed the preparation of two new specifications for wrought-iron sheets covering black and galvanized sheet materials, respectively. These have been approved by the committee for submission to the Society for publication as tentative.

To Draft Iron Bar Standards

The committee has undertaken the preparation of new specifications for single refined wrought-iron bars which will cover material made solely from new iron exclusive of scrap. The existing Standard Specifications for Refined Wrought-Iron Bars (A 41-30) permit the use of purchased scrap and it is planned to modify these specifications likewise, since a separate specification will be prepared for bars of single refined wrought iron.

No adverse criticisms on the tentative revision, issued last year, of the Standard Specifications for

Hollow Rolled Staybolt Iron (A 86-30) have been received by the committee. Action was accordingly taken to recommend this revision to the Society for adoption as standard.

Considers A. A. R. Revision

The committee's attention was called to a number of important revisions which have been made by the Association of American Railroads in their specifications for wrought-iron pipe, bars, blooms, and chain. Considerable interest was expressed in these revisions because Committee A-2 is responsible for a number of specifications for similar materials. The changes proposed by the A.A.R. were accordingly referred to the appropriate A-2 subcommittee for review and consideration in order to bring about the desired harmony between the specifications of the A.S.T.M. and those of the A.A.R.

Committee A-3 on Cast Iron recommended revisions in the Tentative Specifications for Gray-Iron Castings (A 48-32 T). The separately cast tensile bar will be eliminated, because tests have shown that tensile bars cut from the transverse test bars are satisfactory. Transverse test values will be revised.

S.A.E. Division Cooperates

A proposed tentative specification for automotive gray iron castings has been developed with the cooperation of the Iron and Steel Division of the Society of Automotive Engineers.

The Committee on Corrosion of Iron and Steel approved the proposed specifications covering electro-deposited coatings of zinc, cadmium, nickel, and chromium on steel, and it is expected that the A.S.T.M. will issue them as 1935 tentative standards. These were developed as a joint effort of the American Electro-Platers' Society and the A.S.T.M.

Subcommittee VII has completed a critical review of the Preece Test for determining the uniformity of zinc coating on wire. It is planned to publish this method as a draft standard as soon as the subcommittee can complete necessary arrangements. Further work on the use of this test on irregularly shaped articles, such as hardware, is actively under way. Subcommittee VII also has under way a critical review of test methods for determining the weight or thickness of electro-deposited coatings and for determining the weight of zinc coatings on coated hardware.

The development of the so-called "stainless" steels has been among the outstanding metallurgical accomplishments of recent years. As a result of the wide application of these stainless metals, there has been an increasing need for standard specifications and tests.

This matter has been the subject of considerable study by the Committee on Iron-Chromium, Iron-Chromium-Nickel, and Related Alloys of the American Society for Testing Materials. The committee expects to be able to present to the Society in June five new specifications which will cover the annealed corrosion-resistant sheet steels, both plain chromium and chromium-nickel steels and also for cold-rolled chromium-nickel steel. These specifications will be the first for these materials prepared by the committee and represent a significant trend in its work.

New Standards for Castings

The Subcommittee on Specifications for Castings also completed three new specifications for plain chromium-steel castings which were presented to Committee A-10 for presentation to the Society for publication as tentative.

The Subcommittee on Mechanical Tests has prepared an extensive program for testing both annealed and cold-drawn nickel-chromium steel, especially the 18 per cent chromium-8 per cent nickel types, with a view to determining the applicability of the existing A.S.T.M. standard methods. The committee is planning to undertake a cooperative test program to study methods of mechanical testing and their use for these types of steels.

The Committee on Copper Wire approved for submission to ballot of the whole committee important revisions in the Standard Specifications for Bare Concentric-Lay Copper Cable, Medium, Hard, or Soft (B 8-27) which will provide new requirements for testing this type of copper cable. The changes provide for the testing of the cable in its completed form. The present specifications require tests of the individual wires comprising the cable.

A new stranding table for the cable is to be inserted in the specifications. This stranding table seems to have met the approval not only of Committee B-1, but also the Insulated Power Cable Engineers Association and the ASA Sectional Committee on Insulated Wires and Cables.

Adds Trolley Wire Specifications

The committee also took action to propose tentative additions to the bronze trolley-wire specifications to provide requirements covering a higher conductivity trolley wire than the present two classifications of trolley wire. The committee also proposed tentative revisions providing for additional limitations of certain dimensions of grooved trolley wire both bronze and copper.

The Committee on Copper and Copper Alloys, Cast and Wrought, proposed specifications for

wrought phosphor-bronze bearings and expansion plates for bridges and structures, and silicon-bronze bearings and plates for the same purpose.

Brick Subcommittees Report

The A.S.T.M. Committee on Brick considered reports submitted by its various subcommittees.

The Subcommittee on Weathering and Porosity has developed a method by which the weather resistance of fire-clay bodies, such as brick in a wall, may be measured by definite tests. This procedure was approved for submission to letter ballot for inclusion in the new methods of testing brick which are to be issued during the year.

The committee approved revisions for publication as tentative of the existing A.S.T.M. Standard Specifications for Building Brick (Made from Clay or Shale) (C 62-30) which will include provisions for weathering resistance in accordance with the new test method.

The Committee on Clay Pipe gave considerable attention to amendments in the existing Tentative Specifications for Clay Sewer Pipe (C 13-33 T) and approved a number of modifications in the specifications. The committee decided to recommend to the Society that these specifications in their amended form be referred to letter ballot of the Society for adoption as standard.

The committee appointed a subcommittee to conduct investigational work with respect to the placing of the bearing strips in the three-point method on the ultimate strength of clay sewer pipe.

A newly proposed specification for basic sulfate blue lead has been prepared by the Subcommittee on Pigments of the Committee on Preservative Coatings for Structural Materials. This will be submitted to the Society for publication as tentative. Specification requirements are being studied for raw and burnt siennas and umbers and combined with this study is a consideration of the present Standard Specifications for Ocher (D 85-27) involving similar problems.

Accept Viscosity Report

The activities of the American Petroleum Institute Committee on Viscosity Standards and the Standardization of Saybolt Viscosimeter Tubes have emphasized the necessity of amplifying and clarifying the text of the Methods of Test for Viscosity of Petroleum Products and Lubricants (D 88-33). Recommendations of the Subcommittee on Viscosity, which recommended such revisions, were accepted subject to minor changes.

The Subcommittee on Natural Gasoline submitted a revision of Methods D 323-32 T on Vapor Pressure of Natural Gasoline (Reid Method). The revision (vapor pressure of motor and natural gasoline) increases the scope and accuracy of the method. The report of the subcommittee was accepted.

At the meeting of the Committee on Coal and Coke the following methods of test were approved for presentation to the Society next June as tentative, subject to the usual letter ballot vote of the committee:

Method of Test for Screen Analysis of Coal
Test for Grindability of Coal by Hardgrove-Machine Method
Test for Grindability of Coal by Ball-Mill Method

The method for screen analysis of coal covers size testing of coal. It includes specifications for testing screens, sampling procedure, and procedure for making the screen analysis, and applies to all coal except anthracite, powdered coal, and crushed coal as charged into coke ovens, for which methods of size testing have been already standardized by the Society.

The two methods for determination of coal grindability measure the pulverizing characteristics of coal in connection with the commercial pulverization of coal for powdered coal plants.

Progress of Coal Tests

The committee voted to recommend the adoption as standard of the present Tentative Method of Sampling Coke for Analysis (D 346-33 T). Gratifying progress was reported in the development of methods of test for determination of the resistance to breakage of coal on handling.

On the recommendation of its subcommittee, the A.S.T.M. Committee on Bituminous Waterproofing and Roofing Materials approved for submission to letter ballot revisions in the following tentative specifications and test methods, which, if approved, will be presented to the Society:

Tentative Specifications for Asphalt Roofing Surfaced with Powdered Talc or Mica (D224-34T)
Tentative Specifications for Asphalt Shingles Surfaced with Coarse Mineral Granules (D225-34T)
Tentative Specifications for Asphalt Roofing Surfaced with Fine Mineral Granules (D248-34T)
Tentative Specifications for Asphalt Roofing Surfaced with Coarse Mineral Granules (D249-34T)
Tentative Specifications for Asphalt for Use in Constructing Built-Up Roof Coverings (D312-29T)
Tentative Methods of Testing Asphalt Roll-Roofing Surfaced with Fine Talc, Granular Talc or Mineral Granules, also Asphalt Shingles Surfaced with Mineral Granules (D228-33T)

The Subcommittee on Dynamic Fatigue Testing of the Committee on Rubber Products has developed four methods of dynamic fatigue testing which are applicable to testing tire carcasses and belts for ply separation and for flex cracking of vulcanized rubber.

The Committee on Selection and Preparation of Samples for Metallographic Testing recommended that the A.S.T.M. publish its revised methods for preparing and examining specimens, used for both ferrous and non-ferrous metals and alloys as tentative standards.

Testing machines to determine the strength of metals, wood, concrete, brick, and other structural materials often must weigh loads of hundreds of thousands of pounds. Devices to verify the correctness of their readings present a difficult technical problem. Weights applied directly cannot be used for such large forces, and verifying apparatus must be portable, carried to the machine and used there, because the machines, weighing scores of tons in many cases, cannot be moved.

Calibrations of Testing Machines

The A.S.T.M. Committee on Calibration of Testing Machines reviewed the existing tentative standards for such devices, and recommended some slight modifications. The standards will remain tentative for another year.

With the increasing use of thinner sheet metals in many industrial applications, questions of proper methods of determining their physical characteristics and the significance of such tests have become increasingly important. The Committee on Testing Thin Sheet Metals has studied methods of hardness testing of very thin sheet metals and the obtaining of information as to the scope and usefulness of the various mechanical tests.

The indentation hardness studies have resulted in recommendations respecting details of procedure in determining the Rockwell hardness of thin sheet metallic materials and these were approved for submission to the Committee on Indentation Hardness for inclusion in the existing A.S.T.M. Tentative Methods of Rockwell Hardness Testing of Metallic Materials (E 18-33 T).

Sheet Metal Tests

In order to encourage the informal presentation of information concerning the practical utilization of tests applied to metals in sheet form, a questionnaire was prepared and distributed to a large number of laboratories, manufacturers, users, and others interested in the testing of these materials. The information thus far obtained has indicated that various tests, including tension, several types of indentation hardness, cold bend, cupping, fatigue, shear or punching, impact, metallographic, creep, corrosion, embrittlement, etc., are now being used for determining the properties of sheet metals.

The data and information resulting from this questionnaire will be invaluable to the committee in formulating standards for the testing of thin sheet metals. It is expected that all of the replies will be received in time for presenting the information obtained at the annual meeting of the A.S.T.M. at Detroit, Mich., during the week of June 24.

Preparations are now being made by the committee for a round-table discussion of ductility testing of sheet metals which is also to be held during the annual meeting.

A new Committee on Properties of Metals at Low Temperatures has been organized by the A.S.T.M. This subject is of great interest to many branches of industry, because of the subnormal temperatures at which equipment must work, such as railroad equipment in northern climates, airplanes flying at high altitudes, in the liquefaction of gases, dewaxing of oils, etc.

A.S.T.M. Paint Symposium Compiled by ASA Library

The 15 papers comprising the Symposium on Paints and Paint Materials which was the technical feature of the 1935 American Society for Testing Materials Regional Meeting, held in Philadelphia on March 6, have been collected and are now available in the American Standards Association Library.

The Symposium ranges from a survey of the future of the paint industry to technical papers on various phases of paints and paint products and testing of such products.

The titles of the papers indicate the broad scope of the Symposium:

Looking Into the Future
Preparation, Use, and Abuse of Specifications for Paint Materials
Protective and Decorative Coatings for Railway Passenger Car Equipment
Paint Testing
Varnish Testing
Lacquer and Lacquer Testing
Drying Oils
Zinc Pigments
Lead Pigments
Titanium Pigments
Mineral Pigments
Chemical Colors
Natural and Synthetic Resins
Lacquer Solvents and Volatile Thinners

The Symposium will be loaned on request by the American Standards Association Library.

Labor Department's Committee Uses ASA Codes for NRA Safety Codes

General regulations for the protection of the life and health of workers employed in wholesale and retail trade establishments, in addition to the regulations formerly prepared for industrial establishments, have been developed by the Secretary of Labor's Committee on Standards for Safety and Health for NRA Codes.

The general minimum standards for the safety and health of workers in manufacturing industries have been used as a basis for approximately 95 safety and health standards for individual industries, furnished by the Secretary of Labor's Committee to the respective code authorities, or to deputy administrators.

Part 3 of the Code of Lighting: Factories, Mills, and Other Work Places (A11), the Safety Code for Industrial Sanitation (Z4.1–1935), the Building Exits Code (A9), the National Electrical Code (C1), the Safety Code for Elevators, Dumbwaiters, and Escalators (A17), all approved by the American Standards Association, are specifically mentioned in the Minimum Standards for the Safety and Health of Workers in Mercantile Establishments as providing standard requirements approved by the committee.

Canadian Association Issues Standards for Bolts and Nuts

Specifications for carriage and plough bolts and square and hexagon nuts, representing the latest Canadian practice, have been published by the Canadian Engineering Standards Association. Heavy bolts and nuts were included in the specifications because they are used extensively on railroad equipment, but track bolts are not included. A variation in depth of the square depending on the length of bolt is allowed on carriage bolts.

Farmer Heads Research Committee Of Institute of Electrical Engineers

F. M. Farmer, vice-president, Electrical Testing Laboratories, and vice-chairman of the Standards Council of the American Standards Association, was re-appointed chairman for the year 1934-35 of the American Institute of Electrical Engineers' technical committee on research. Mr. Farmer was chairman of the committee during part of last year.

Mr. Farmer has been a member of the Institute's research committee since 1929. He is also a member of the committee on power transmission and distribution, and coordination of Institute activities.

Mr. Farmer has been active in the work of the American Standards Association for some years. He is vice-chairman of the ASA Standards Council, and chairman of the Board of Examination, which decides upon projects and standards to be submitted to the American Standards Association. He is chairman of two of the ASA sectional committees, and a member of several other sectional committees. He is also a member of the Electrical Standards Committee and of the United States National Committee of the International Electrotechnical Commission.

Lamp Inspectors Request NRA To Require Safety Standards

The International Association of Electrical Inspectors formally requested that safety specifications be incorporated in the supplementary NRA code of the Lamp and Shade manufacturers.

W. J. Mahan, president of the Association, specifically requested NRA to require all lamps to conform to the safety standards of the Underwriters' Laboratories, and suggested that all lamps meeting these requirements be marked so that the public may distinguish the approved from the unapproved lamps.

Mr. Mahan stressed the need for the adoption of safety standards on account of the number of electrical accidents caused by poorly made portable lamps, many of which come from foreign countries.

A.I.E.E. Submits Revised Standards On Electrical Recording Instruments

The American Institute of Electrical Engineers has submitted a proposed revision of its report number 40 on Standards on Electrical Recording Instruments to the American Standards Association. This proposed standard has been referred to the sectional committee on electrical measuring instruments (C39), within whose scope it falls, for consideration and submittal to the ASA for approval as American Standard.

British Standards Institution Will Develop Dairy Standards

Dairy standards are now on the program of the Chemical Division of the British Standards Institution, as a result of the transfer to the B.S.I. of work begun by committees acting under the Empire Marketing Board.

Scientific Progress Demands Revision Of Building Code, British Experts Say

PROBLEMS of standardization and unification of all building regulations and national planning for slum clearance, which are now receiving widespread attention in Great Britain, will be emphasized at the Fourteenth International Housing and Town Planning Congress which will be held in London in July.

Present regulations, made effective at a time when scientific knowledge had not developed to the point it has reached today, in many cases do not allow the use of modern materials, and frequently demand strengths of materials which are unnecessary with modern methods of building.

For instance, in many areas, a wall must be of a certain thickness of "well-burnt brick", no account being taken of the strength of the bonding mortar, and it is not possible to use thinner walls although they may be of greater strength.

A national Authority on building technique, which would have power to standardize all building regulations throughout the country, is essential, according to *Industry, Illustrated*, London. It should succeed in making the introduction of modern materials, when properly tested, both easier and quicker.

Uniform Authority Needed

Early organization of such a uniform building authority is necessary for the logical development of housing in Great Britain, particularly in view of the tremendous increase in building activity which can be expected if the Housing Bill which is now being debated is adopted. The bill, "to make further and better provision for the abatement and prevention of overcrowding", is designed to place all of the Government's authority behind an extensive building campaign to eliminate overcrowding, increase employment, and stimulate the building and supply industries.

The Bill makes it an offense for the tenant and landlord of a dwelling house to allow it to remain overcrowded after a certain specified date, subject to suitable alternative accommodation being available. A dwelling house is defined as overcrowded if two people over 10 years of age and of opposite sex, other than husband and wife, have to sleep in one room, and if the number and floor area of the rooms are less than a prescribed minimum.

Every local authority is required to make a survey of overcrowding in its area and to prepare proposals for building the requisite number of new houses.

Government Offers Subsidy

A subsidy is offered by the Government to encourage the erection of tenement dwellings in overcrowded areas in the center of large towns.

Criticism of the bill centers around the fact that there is no central planning authority to unify the building plans and regulations for the entire country, and to prevent congestion in certain areas.

Great Britain's contribution to the International Housing and Town Planning Congress will be in the form of two papers, one on town planning and the other on slum clearance. The town planning paper will deal with questions such as industrial decentralization and transport as well as with ribbon development. The slum clearance paper will set forth the various views of groups of experts on the methods for providing low rental dwellings, and on the controversy between the question of cottage versus tenement development.

Representatives of housing authorities from France, Italy, Switzerland, Belgium, Holland, and the United States, as well as a large official German delegation, will be present at the International Congress.

Standard for Jig Bushings Proposed for ASA Approval

A proposed American Standard for Jig Bushings, developed by Technical Committee 8 of Sectional Committee B5 on Small Tools and Machine Tool Elements, has been submitted to the American Standards Association by the sponsors for the project.

Sponsors for the committee are the American Society of Mechanical Engineers, the Society of Automotive Engineers, and the National Machine Tool Builders Association.

Committee on Zinc Coating Approves Standards and Will Revise By-Laws

DURING the Regional Meetings of the American Society for Testing Materials in Philadelphia early in March, a meeting of the sectional committee on Zinc Coating of Iron and Steel (G8) was held to consider a number of standards, as well as proposed modifications in the methods of conducting the committee's work.

Four standards covering specifications for zinc coating (galvanized) were approved by the sectional committee, and will be submitted to the Standards Council of the American Standards Association:

Standard Specifications for Zinc-Coated (Galvanized) Iron or Steel Telephone and Telegraph Line Wire (A.S.T.M. A 111-33)

Standard Specifications for Zinc-Coated (Galvanized) Iron or Steel Tie Wires (A.S.T.M. A 112-33)

Standard Specifications for Zinc-Coated Iron or Steel Chain-Link Fence Fabric Galvanized After Weaving (A.S.T.M. A 117-33)

Standard Specifications for Zinc-Coated (Galvanized) Iron or Steel Wire Strand (Cable) (A.S.T.M. A 122-33)

Zinc Coating Committee Includes Many Interests

Wide representation on the Sectional Committee on Zinc Coating of Iron and Steel sponsored by the American Society for Testing Materials, is indicated by the following list of members:

Chairman, *J. A. Capp*, American Society for Testing Materials

Secretary, *A. B. Campbell*, National Electric Light Association

American Society for Testing Materials, *John A. Capp, H. O. Hill, E. F. Lundeen, H. E. Smith*

American Association of Port Authorities, *Chas. W. Staniford*

American Electro-Platers Society, *Dr. A. K. Graham*

American Gas Association, *R. S. Dean*

American Institute of Architects, *F. Leo Smith*

American Institute of Mining and Metallurgical Engineers, *W. M. Peirce*

American Marine Standards Committee, *Horace H. Thayer*

American Petroleum Institute, *J. G. Detwiler*

American Society of Agricultural Engineers, *K. J. T. Ekblaw*

American Society of Refrigerating Engineers, *A. P. Dougherty*

American Transit Association, *H. S. Murphy, L. R. Wagner*

American Water Works Association, *R. S. Dean, R. C. Ewry*

American Zinc Institute, *Julian D. Conover, George C. Bartells (Alt.)*

Association of American Railroads—Engineering Division—Construction and Maintenance Section—Roadway Committee, *W. C. Swartout, C. P. Van Gundy (alt.)*

Association of American Railroads—Operating Division—Telephone and Telegraph Section, *J. A. Jones*

Association of American Steel Manufacturers Technical Committees, *G. A. Reinhardt, W. R. Shimer, F. N. Speller, E. S. Taylerson, R. H. Dibble (alt.)*

Electric Light and Power Group, *A. B. Campbell (alt.)*

International Acetylene Association, *R. S. Dean*

Manufacturers Standardization Society of the Valve and Fittings Industry, *F. H. Morehead*

National Association of Flat Rolled Steel Manufacturers, *R. T. Baker*

National Association of Purchasing Agents, *D. L. Bartlett*

National Association of Sheet Metal Contractors of the U. S., *Wm. A. Fingles*

National Electric Manufacturers Association, *W. L. Maucher, F. L. Wolf*

Society of Automotive Engineers, Automobiles, *W. M. Phillips*

Society of Automotive Engineers, Parts, *W. H. Hutchins*

Society of Naval Architects and Marine Engineers, *Horace H. Thayer*

Telegraph Interests, *C. E. Mobius, W. F. Markley (alt.)*

Telephone Group, *C. D. Hocker, S. C. Miller, C. S. Gordon (alt.)*

U. S. Department of Agriculture, Bureau of Public Roads, *L. G. Carmick*

U. S. Department of Commerce, Bureau of Standards, *H. S. Rawdon*

U. S. Navy Department, Bureau of Yards and Docks, *H. A. Stacy*

U. S. War Department, Ordnance Department, *J. E. Munroe*

Members-at-Large, *L. W. Hopkins, J. L. Schueler*

Canadian Engineering Standards Association, Liaison, *A. T. Enlow*

These standards have been under active consideration by the sectional committee and A.S.T.M. Committee A-5 on Corrosion of Iron and Steel for several years. They were adopted in revised form by the Society in 1933. It is expected that they will soon be submitted by the sectional committee to the ASA Standards Council for approval as American Standard.

Consideration was also given to revisions effected last year by A.S.T.M. Committee A-5 in Tentative Specifications for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Ordinary Purposes (A.S.T.M. A 125). A previous edition of this standard was before the sectional committee in 1930 and 1931. The provisions concerning zinc coating of pipe were considered inadequate, and suggestions made at that time for more comprehensive clauses on zinc coating have been incorporated, in the main, in the latest revision of the standard, published by the Society in 1934. The sectional committee decided to take a letter ballot immediately to determine the acceptability of the revised document.

Because considerable duplication has occurred in both personnel and activities of the sectional committee's technical subcommittees and the subcommittees of A.S.T.M. Committee A-5 and Committee A-5 itself, it was decided that a revision of the sectional committee's by-laws is necessary.

The standards developed by the technical committees of the sectional committee have been Specifications for Zinc (Hot-Galvanized) Coatings on Structural Steel Shapes, Plates, Bars and their Products (G8.1–1933) and Tentative Specifications for Zinc Coatings (Hot-Dip) on Hardware and Fastenings (A 153-33 T). The first of these standards was developed by technical committee III which completed its assignment and was discharged in 1933. The second was prepared by technical committee I and, following recommendations of the sectional committe, was published by the Society as an A.S.T.M. tentative standard in 1933. Further work on this standard will be required before it can be submitted to the ASA. All other standards considered by this sectional committee have been developed by A.S.T.M. Committee A-5.

In order to effect a closer tie-in of the activities of these groups with overlapping personnel, the sectional committee authorized its executive committee to develop a revised set of by-laws, intended to provide for less duplication in the work of these related groups. A report setting forth plans proposed by the Executive Committee is expected to be submitted to the sectional committee shortly.

Consider Committee of Experts To Advise ASA on Dust Diseases

A proposal to appoint an Advisory Committee of experts on the prevention of occupational diseases will be considered at the April 25 meeting of the ASA Standards Council. This Advisory Committee would correlate available information on this subject and advise the committees working on safety codes under the procedure of the American Standards Association.

Dust hazards are among the more important of the causes of occupational diseases which are being considered by these committees.

Mining Symposium Describes Fight Against Dust Hazards

Methods by which a combination of engineering and medical sciences are winning their fight against silicosis, once widely prevalent in dust-laden coal mines, was described at a symposium on the health of miners at the recent meeting in New York City of the American Institute of Mining and Metallurgical Engineers. Silicosis is the disease of the respiratory organs caused by breathing rock dust.

Dr. Donald E. Cummings, of the Saranac Laboratory for the Study of Tuberculosis, said that better mine ventilation, spraying with water of air passages and exposed surfaces, delaying of dust-producing blasts until the end of the working shift, all have combined to lower the incidence of silicosis in coal-mine workers. Water curtains, wall-like sprays which keep back dust, have made it possible to reduce dust concentration by 65 per cent.

A new way of preventing dust with a hollow

rock drill was described by Theodore Hatch, instructor in industrial sanitation at the Harvard Engineering School. Down the hollow drills flows swift-moving air, which blows the dust out through the bore hole into a dust hood connected with the mine exhaust system. Seldom appreciated, Mr. Hatch indicated, is the fact that in drilling 100 feet of two-inch bore some 237 pounds of dust will be liberated. In volume it totals three cubic feet.

Dr. R. R. Sayers, of the U. S. Public Health Service, authority on industrial dust, reported studies of what constitutes dangerous dust concentrations in mines. The human system, he said, can tolerate 50,000,000 dust particles for each cubic foot of air if the quartz dust in it is not more than five per cent. If there is 35 per cent quartz present, however, a concentration of only 10,000,000 dust particles per cubic foot must be avoided. —*Science*, February 15.

German Standard Tests for Coal Are Being Loaned by ASA Library

A translation of the recently issued German Standards for testing solid fuels, particularly coal and lignite, is now in the American Standards Association Library.

The standard gives detailed instructions for sampling, collecting and storing, and preparing the samples for coarse-grained solid fuels and for pulverized fuel, both stationary and in motion. Methods of test for gross and net calorific value of fuels, for chemical analysis, and for determination of fixed carbon (coke yield) and volatile matter in solid fuels are included in detail.

The Berthelot-Mahler type of bomb calorimeter is required where accurate results are needed. The so-called "xylol" method is recommended for all fuels that are sensitive to air-drying, particularly sub-bituminous coal, lignite, peat, and wood.

The standard was developed cooperatively by the Central Association of German Coal Merchants, German Association for the Testing of Materials, and the Mining Technical Standards Committee.

The ASA Library will lend copies of the standard upon request.

C.E.S.A. Approves Revised Canadian Electrical Code

Copies of the newly revised Canadian National Electrical Code are now available from the Canadian Engineering Standards Association, National Research Building, Ottawa, at 25 cents each.

The many important revisions which have been made in the Code are given in detail in the Preface. The Code also includes a list of specifications issued under Part II of the Canadian Electrical Code.

The revised Code was prepared by the Special Committee on Code Revisions, and after approval by all the Provincial Code Committees, was finally approved by the Main Committee of the Association.

Copies of the Code can also be ordered through the office of the American Standards Association.

Quality Standards for Rubberized Goods Are Approved by NRA

A Code amendment establishing minimum standards of quality for rubberized automobile-top fabrics sold to the jobbing, replacement, and accessory trades has been given NRA approval, it was announced recently.

The amendment, which is in accordance with article IV-A, section 7, of the automobile fabrics, proofing, and packing division of the Rubber Manufacturing Code, fixes a quality floor below which manufacturers will not be permitted to go. Material which does not conform to the quality specifications must be marked conspicuously with the word "seconds" at regular intervals on the fabric.

Standard specifications include length, width, and weight requirements for double and single toppings for both open and closed cars and a number of inspection rules setting forth directions for determining permissible color and finish variations, etc.

Manufacturers are required to stamp all products with a characteristic identification stamp as a protection against unjust claim or shortage. Rejections due to visible defects must be made prior to cutting or marking and within 30 days after receipt by customer.

Revised Recommendation Submitted for Approval

A revision of Simplified Practice Recommendation R70, Salt Packages, was submitted to all interests for consideration and approval by the Division of Simplified Practice, National Bureau of Standards.

In addition to the capacity in pounds for various kinds of containers (pockets, cartons, burlap, cotton, and barrels) given in the original recommendation, the revision includes tables covering eight different kinds of salt. Each table gives the weight of salt, and the method of packaging, whether cotton, burlap, carton, pocket, bag, or barrel.

U. S. Bureau of Mines Will Include Service To Mineral Industries in Enlarged Program

Services of the United States Bureau of Mines to the mineral industries, which have been curtailed through lack of funds in recent years, will be resumed as soon as conditions permit, according to Dr. John W. Finch, newly appointed Director of the Bureau.

In discussing work which he plans to resume as soon as funds can be obtained, Dr. Finch mentions explosives research, which was responsible for the development of comparatively safe "permissible explosives" for use in coal mines; recommissioning of the nine mine rescue cars that now stand idle on railroad sidings, but which should be placed in service to render first aid in mine rescue and recovery operations, and in safety education; the study of methods of accident prevention, particularly with respect to falls of roof in mine; expansion of first-aid training, which has been reduced to about one-half its former activity; and the resumption of studies of health of miners and of sanitation in mining communities.

Includes Research

In addition to its safety program, the Bureau expects to increase its activity in petroleum research, particularly in preventing waste of petroleum and natural gas during production, and in the study of refining methods to obtain new or better products. It also expects to renew its studies of fuel utilization, including those on smokeless combustion, the use of pulverized coal, and the manufacture of gas, coke, and by-products, as well as its fundamental scientific research as a basis for the development of new methods and new processes. It also expects to enlarge its service in the field of mining and milling methods and costs.

"In attempting to solve industrial problems, the national administration is faced with the necessity of so-called long-range planning," Dr. Finch says. "So far as minerals are concerned, advance estimates of demand for particular minerals over definite periods of time are essential to the intelligent consideration of a planning program. The collection of statistics affecting the mineral industries must be continuous and made on a uniform basis, for which the Government is the better equipped. And finally, the Government—as representing the greatest good for the greatest number—is in a position to define clearly a just policy of conservation that must be an integral part of any long-range planning."

The U. S. Department of Interior, of which the Bureau of Mines is a part, is a Member-Body of the American Standards Association, and the Bureau of Mines is represented on the ASA Standards Council. The Bureau of Mines is also represented on the Mining Standardization Correlating Committee, which supervises all of the mining projects under the procedure of the American Standards Association as well as on many of the American Standards Association sectional committees.

Industry Reaffirms Simplified Programs

The following Simplified Practice Recommendations have been reaffirmed by the Standing Committees of the industries, according to a recent announcement of the Division of Simplified Practice, National Bureau of Standards:

Dental Brush Wheels R116-30
Dental Lathe Grinding Wheels R130-32
Flax and Hemp Twine R136-32
Steel Barrels and Drums R20-28
Steel Reinforcing Bars R26-30
Wooden Butter Tubs R135-32

Copies of the Recommendations can be obtained from the Superintendent of Documents, Washington, D. C., or from the office of the American Standards Association at 5 cents each.

Prentis Represents Civil Engineers on ASA Council

The American Society of Civil Engineers has named Edmund A. Prentis to act as its representative on the Standards Council of the American Standards Association for the next three years.

International Inter-Change of Parts Made Possible by Accuracy

Permanence of length to about one part in 10,000,000 during 40 years is the record of precision in our standard of length disclosed in a study recently made by the National Bureau of Standards.

Hundreds of years ago the standard yard varied with the girth of the succeeding chieftains, and more recently the distance from the point of Henry the First's nose to the end of his thumb was the standard yard.

At one time the determination of the standard foot was a complicated affair. Scientific usage decreed that "one should stand at the door of church on Sunday and bid sixteen men to stop as they happened to pass. Make them put their left feet one behind the other and the length thus obtained shall be the right and lawful rood to measure and survey the land. The sixteenth part of the rood shall be the right and lawful foot."

Our present-day methods of manufacture demand precision in measurement to one-millionth of an inch. Sixteen countries including the United States and Great Britain have agreed that for industrial purposes the inch shall be equal to 25.4 millimeters. Because temperature affects the standard gages used in checking dimensions of length, the international agreement includes the standard temperature of 20 degrees C (68 degrees F) as the one at which industrial measurements are supposed to be made, or to which they are reduced. The acceptance of this agreement means that an automobile manufactured to the inch measure in the United States, for example, will conform exactly in all dimensions to a similar car manufactured to the same basic dimensions under the metric system in any part of the world.

Publish Recommendation For Fewer Sizes of Cans

Simplified Practice Recommendation R155-34, Cans for Fruits and Vegetables, which recommends a reduction to 27 sizes from the former wide variety of sizes, has been printed. Copies are available from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the American Standards Association, at five cents each.

Those interested in boxes used in shipping canned fruits and vegetables, can obtain copies of Simplified Practice Recommendation R146-33, Corrugated and Solid Fiber Boxes for Canned Fruits and Vegetables from the Government Printing Office or from the ASA at five cents each.

British Draft Standard For Daylight Lamps

A draft specification for artificial-daylight units has been issued by the British Standards Institution for comment. It covers Tungsten Filament electric lamps with glass bulbs colored so that the resulting light gives the approximate sensation of daylight. The draft deals with the selection and testing of lamps for mechanical, electrical, and physical defects, the selection and testing of lamps for initial watts and efficiency, and the color of the light.

Prepare List of Manufacturers Willing to Certify Products

In order to facilitate the use of nationally recognized commodity specifications, the Division of Codes and Specifications, National Bureau of Standards, has compiled lists of manufacturers who have expressed their desire to supply material on contracts based on certain selected Federal Specifications and Commercial Standards. These manufacturers are also willing to certify to the purchaser, upon request, that the material thus supplied is guaranteed to comply with the requirements and tests of these specifications and standards. A total of 450 lists covering 450 separate commodities, representing about 9,400 firms have been compiled to date.

Copies of the lists designated as Letter Circular 277a and Supplement 2 to Letter Circular 256a are now available for distribution to tax-supported agencies. Requests should be addressed to the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C., or to the American Standards Association office.

Use Standard Samples to Determine Tea Quality

Tea lovers can have quality standards all their own way. Not a pound enters the United States without being compared with standard samples for purity, quality, and fitness for consumption. A Board of Tea Experts, who prepare and submit the standard samples, is appointed each year by the Secretary of Agriculture.

Mechanical Equipment Takes Place of Guess Work in Paper Tests

A popular discussion of the chief points in the maintenance, calibration, and operation of common paper-testing instruments, is given in a paper by F. T. Carson of the National Bureau of Standards, published in *Paper Industry*, December, 1934.

The paper calls attention to the development of paper-testing instruments from simple empirical tests depending almost wholly upon the judgment of an individual toward mechanical testing aids that tend to minimize the personal element. A great many testing devices of varying degrees of merit have been designed to aid the paper technician, but many of them have had only a brief day and have then passed on.

The choice of effective testing aids from among a confusion of unappraised devices is a very real problem to the paper technician. Although the Technical Association of the Pulp and Paper Industry has done what it can to simplify this problem, its present facilities do not permit of a systematic and thorough appraisal of the many and varied testing instruments that are being offered. It has, however, standardized a few important tests and apparatus, and this paper confines itself to the more important of these.

Introduces More Factors

It takes up first the approved means of measuring and recording the humidity and temperature in the testing room, and attempts to point out how easily one may be misled about the testing conditions unless these instruments are accorded the proper care and attention, and unless they are used intelligently.

Emphasis is given to those phases of maintenance and calibration that can readily be attended to in any paper-testing laboratory, especially those of importance most likely to be neglected.—*Technical News Bulletin, National Bureau of Standards, January.*

Consider Revised Standard On Lightning Arresters

A revision of the standard on lightning arresters of the American Institute of Electrical Engineers, No. 28, has been submitted to the ASA for approval as American Standard. The standard is now receiving consideration in the Electrical Standards Committee.

Bureau of Standards Shows Accuracy of National Standard of Length

A study made recently at the National Bureau of Standards shows that the basis of length measurements in this country, National Prototype Meter No. 27, is apparently the same, relative to the International Prototype Meter, as it was more than 40 years ago, to about one part in 10,000,000.

The National Bureau of Standards is the custodian of the standards of length in the United States. The standard on which all of our national standards of length are based is the International Prototype Meter, a platinum-iridium bar held in custody in a vault at Sévres, near Paris, by the International Bureau of Weights and Measures.

National Prototype Meter bar No. 27, a similar bar calibrated in terms of the International Meter and kept at the National Bureau of Standards, is the official standard by which the Bureau calibrates its working meter bars. These working standards are used in routine comparisons made at the Bureau when length standards are submitted for test by State authorities, college and research laboratories, manufacturers of precision instruments, and others.

Standard Railway Track Gauge Is Suggested for Australia

Adoption of a standard railway track gauge of 4 ft 8½ in. is essential to the development and safety of the Australian Commonwealth in the opinion of Sir Maurice Hankey, secretary to the Committee of Imperial Defence.

In a recent report on the Australian railways, the Commissioner suggests that the work of changing over to a uniform railway gauge might well be made a part of the national scheme for the relief of unemployment.

The work of providing a uniform gauge on lines connecting the capital cities of Australia would probably take seven years, and would mean a large expenditure for automatic couplings and for the replacement of locomotives and other rolling stock unsuitable for conversion.

Railroad Standards Progress Reported at Chicago Session

Committees Tell of Standards Work During Past Year for Bridges, Rails, Ties, Wood, Masonry, Scales, and Grade-Crossings

DURING the three-day convention of the American Railway Engineering Association, held recently in Chicago, many problems of standardization were considered.

For the Committee on Standardization, J. C. Irwin, chairman, reported that the committee was repeating its views on the classification of the contents of the Manual of the A.R.E.A., and was giving particular attention to those sections where action looking toward national standardization might be warranted.

The report also reviewed meetings of the committee held during the past four years including two which were held jointly with representatives of the ASA in 1932 and with the Canadian Engineering Standards Association in 1934. A discussion of the activities of the Canadian Engineering Standards Association and the ASA relating to the A.R.E.A. was included.

Standards for Crossings

The Joint Committee on Grade Crossings of the American Association of Railways reported progress in establishing uniform methods of standardization and recommended practices for protection of crossings of highways and railways at grades.

The Committee on Wood Preservation reported that the A.R.E.A. specifications for creosote and for methods of measuring, sampling, and analyzing preservatives had been harmonized with those of the Wood-Preservers' Association and the American Society for Testing Materials to bring the specifications of all three associations into complete accord. These revised specifications were adopted. The report further discussed research activities connected with control of termite action, piling used for marine construction, service test records and the collection of information on the toxic value in various conditions of preservative mixtures.

The report of the Committee on Ties discussed the question of adherence to tie standards. Because an adequate supply of ties is now available, the A.R.E.A. specifications for ties (American Standards: 03-1926) are being followed more closely. Marked improvement in tie inspection over former practices was reported. The committee recommended more extensive use of longer ties and considered the 8½ ft ties desirable.

The Sectional Committee on Cross-Ties and Switch-Ties is giving attention to a possible revision in the American Standard. J. Foley of the Pennsylvania Railway is chairman of the Sectional Committee under the sponsorship of the Association of American Railways and the Forest Service of the U. S. Department of Agriculture.

The Committee on Yards and Terminals called attention to the deletion in 1934 of sections of the Manual covering Motor-Truck, Built-In, Self-Contained and Portable Scales for Railway Service, for which substitute recommendations had been offered. Following further consideration during the past year, revised specifications with certain additional changes were recommended to the A.R.E.A. and adopted at the recent meeting.

The Committee on Tracks reported that after considerable study it was deemed impracticable to attempt to prepare a standard design of anti-creepers because six patented types now in service satisfactorily cover the requirements of American and Canadian railways. During the past year further attention has been given to standards for tie plates but the latest designs have not proven acceptable.

Steel Bridge Standards

New specifications for Steel Railway Bridges were the outstanding features of the report of the Committee on Iron and Steel Structures. After consideration by the committee for several years, the specifications were first offered for further

study to the A.R.E.A. convention in 1934. This year their adoption was recommended by the Committee and they were approved by the A.R.E.A. for inclusion in the Manual. In connection with their consideration, several monographs discussing various provisions of the specifications have appeared and a large amount of interest in the new specifications has been evidenced. The committee considered that these specifications also covered its assignment on Tests of Steel Columns and Formulas for Design, the Use of Alloy Steels for Structural Purposes, and the Bearing Value of Small Rollers. Upon recommendation of this committee, revisions in the Manual were made covering the design of the flanges of segment girders of rolling-lift bridges and methods for strengthening existing bridges.

Rail Standards

Among the matters considered by the Committee on Rails were recommendations with respect to the adoption of a design of rail joint bar for use with 131-lb R.E. rail. Revisions of the form used for presenting the annual report of rail failures to permit the separation of transverse fissure failures from other types of failures, and the separation of failures discovered by detector cars from those found in service, were approved for inclusion in the Manual. The committee reported that it had found that less than half of the roads represented in its membership were using A.R.E.A. specifications for quenched carbon-steel and alloy-steel track bolts, and that almost an equal number were using specifications adopted by the American Society for Testing Materials. Believing this condition undesirable, the committee had revised the A.R.E.A. specifications with the hope that these will be approved by the A.S.T.M. and adopted generally by all railroads.

Grading of Timbers

Proposals for the Simplification of Grading Rules and Classification of Timber for Railway Uses for consideration during the coming year with a view to adoption at the next convention, formed an important part of the report of the committee on Wooden Bridges and Trestles. These proposals also included uses, sizes, stress-grades, and working stresses for bridge timbers. In the opinion of the committee, simplification and economy in the purchase and use of structural timber and lumber would follow their adoption.

The Committee on Masonry presented recommendations which were adopted for inclusion in the Manual on specifications for reinforced concrete arches for railway building, specifications for "Shotecrete" (defined as pneumatic-placed concrete), and recommendations with respect to several definitions relating to Masonry. New specifications were also recommended covering the making and driving of premolded piles, additions to specifications for girderless flat slabs, and changes in the specifications covering the distribution of loads in designing railway structures. These recommendations were adopted, following minor revisions after discussion.

Secretary Roper Recommends Uniform Motor Vehicle Code

The National Conference on Street and Highway Safety, Washington, D. C., in cooperation with the National Conference of Commissioners on Uniform State Laws, originally prepared in 1925-1926 the Uniform Vehicle Code, which was reviewed and revised by the National Conference in 1930 and again in 1934. In each case the revisions were based upon thorough study, by a representative committee, of the provisions of the various Acts in the light of experience and changed conditions.

Recommended Code

The Uniform Vehicle Code, as revised, is recommended for state enactment as the foundation for uniform traffic regulation. The revised forms of the five Acts constituting the Uniform Vehicle Code have recently been issued by the National Conference on Street and Highway Safety. These Acts are as follows:

Uniform Motor Vehicle Administration Registration, Certificate of Title and Anti-Theft Act
Uniform Motor Vehicle Operators' and Chauffeurs' License Act
Uniform Motor Vehicle Civil Liability Act
Uniform Motor Vehicle Safety Responsibility Act
Uniform Act Regulating Traffic on Highways

For municipalities the Conference has prepared Model Traffic Ordinances consisting of three parts:

A Model Municipal Traffic Ordinance
A Model Traffic Administrative Ordinance
State Law Provisions Which Might Be Included in the Traffic Ordinance

In issuing these revisions, Daniel C. Roper, Secretary of Commerce, Chairman, National Conference on Street and Highway Safety, says that the importance of uniform legislative standards in reducing accidents and facilitating the movement of traffic cannot be over-estimated.

Committee Will Advise on Exhaust Code Requirements

A special committee which will outline the essential points to be covered in a study of the fundamental engineering requirements for design and construction of exhaust systems has been appointed by the Subcommittee on Fundamental Requirements of the Sectional Committee on Safety Code for Exhaust Systems. The subcommittee was assigned to submit a report which would give the sectional committee a clearer idea of the fundamental problems involved in the design and construction of exhaust systems, to be included in the scope of the committee's work.

The Sectional Committee on Safety Code for Exhaust Systems found that its work depended not only on knowledge of engineering details of exhaust systems but also on knowledge of the effect on workers of the dust to be carried by the systems. The Advisory Committee on Prevention of Industrial Diseases, which will be considered by the Standards Council at its next meeting, was therefore recommended to the Safety Code Correlating Committee by this sectional committee.

Members of the subcommittee on Fundamental Requirements include: S. E. Whiting, Liberty Mutual Insurance Company; Dr. R. R. Sayers, U. S. Public Health Service; J. C. Hardigg, Consulting Engineer; W. M. Graff, National Bureau of Casualty and Surety Underwriters; M. I. Dorfan, Dust Collecting Division, Blaw-Knox Company; H. N. Nichols, B. F. Sturtevant Company; Theodore Hatch, School of Public Health, Harvard University; Wm. L. Kepplinger, Carrier Engineering Corporation; G. E. Sanford, General Electric Company; and Dr. Leonard Greenburg, John B. Pierce Laboratory of Hygiene, Yale University.

The sectional committee is working under the direction of the International Association of Industrial Accident Boards and Commissions.

Specifications Used For Government Buying

Copies of Federal Specifications recently issued for use by government departments in their purchasing have been received by the American Standards Association Library. These specifications are on sale by the Superintendent of Documents, Washington, D. C., or by the ASA office, at five cents each. They may also be borrowed from the ASA Library.

The symbols given all refer to Section IV (Part 5) of the Federal Standard Stock Catalog.

Bluing; Laundry O-B-491
Lamps; Electric, Incandescent, Large, Tungsten-Filament (1935 Supplement) W-L-101a
Sterilizers; Accessories and Portable Lockers for GG-S-751
Packing; Asbestos, Sheet, Compressed HH-P-46
Brass; Commercial and Naval; Castings QQ-B-621
Wood-Preservative; Creosote-Coal-Tar-Solution for Ties and Structural Timbers TT-W-566
Cards; Guide, Calendered (File Size) UU-C-86
Cards; Index, 100% Rag for Permanent Records UU-C-116
Pipe-Fittings; Cast-Iron (Threaded) WW-P-501
Screw Drivers; GGG-S-121
Fresh Beets HHH-B-166
Bolts; Nuts; Studs; and Tap Rivets (and Material for Same) FF-B-571a
Phosphor Bronze; Bars, Plates, Rods, Shapes, Sheets, and Strips QQ-B-746
Window Brushes H-B-751
Pressboard Guide Cards (File Size) UU-C-96
Wilton Carpets and Rugs DDD-C-71a
Fresh Carrots HHH-C-81
Fresh Cauliflower HHH-C-101
Metal Folding Chairs AA-C-291
Vitrified China M-C-301
Colors for American Flag TT-C-591
Water-Suction Hose Couplings WW-C-646
Mounted Natural Grindstones SS-G-691
Smooth-Bore Suction Water Hose ZZ-H-561a
Calking Lead QQ-L-156
Soluble Cutting Oil VV-O-261
Lard Oil C-O-376
Memorandum Pads UU-P-21
White Lithograph-Finish 100% Rag Chart Paper UU-P-171

Michael Idorsky Pupin

Michael Idorsky Pupin, who died March 12 in his 77th year, was president of the American Institute of Electrical Engineers during the early discussions which led to the formation of the Electrical Standards Committee.

Dr. Pupin had been professor of electro-mechanics at Columbia University from 1901 to 1931.

Among his most famous inventions were the inductance coil for long distance telephony, a tuning device to overcome radio interference, an electrolytic retifier to handle high-frequency signals and a speedier X-Ray technique.

Propose American Standard For Drafting Room Practice

A proposed American Standard for Drawings and Drafting Room Practice, developed by an ASA sectional committee jointly sponsored by the American Society of Mechanical Engineers and the Society for the Promotion of Engineering Education, has been submitted for American Standards Association approval.

This proposal covers: Arrangement of views; lines and line work; sectional views; dimensioning; screw thread representation; trimmed sizes; and lettering.

Conover Named Secretary Of American Mining Congress

The American Mining Congress recently announced that J. F. Callbreath, secretary since the organization of the Mining Congress in the early 1900's, has become Secretary Emeritus, and Julian D. Conover has been appointed secretary.

Mr. Conover has had active experience in the direction of Association activities in the mining field for many years. At the time of his appointment as secretary of the Mining Congress, Mr. Conover was serving in a similar capacity for the American Zinc Institute and had been with the Institute for about five years. Mr. Conover's earlier experience was largely with mining activities in the Middle West, including several years' experience as secretary of the Tri-State Zinc, Lead, and Ore Producers Association.

Mr. Conover has been active in the work of the American Standards Association, having been a member of the Mining Standardization Correlating Committee until 1931, and having worked on several ASA sectional committees.

Purchasing Agents Request Labels for Packaged Goods

At its recent Cleveland Convention, the Governmental Group of the National Association of Purchasing Agents passed a resolution favoring the marking and labeling of all commodities sold in sealed containers, in order to insure the purchaser against fraud or inferior quality. The resolution cited the fact that many commodities are sold in sealed containers and it is impossible for the purchaser to make any positive identification of the contents.

This resolution is directly in line with the canning industry code which requires that a committee be authorized to formulate standards of quality and proper labeling for products of the canning industry.

Railroad Association Division Revises National Specifications

Revised material specifications proposed by the Association of American Railroads, Mechanical Division, committee on this subject, were recently approved by the Division and will be included in the Manual of Standard and Recommended Practice.

Of the 41 separate propositions recommended in the revision, the first pertained to the issuance and numbering of material specifications and the second to the elimination of nine specifications for such materials as steel axles, shafts, bolts and nuts, cylinder parts, fire hose, engine-bolt iron, foundry pig iron, axle light belting, welding wire, etc.

In the Type-E coupler specifications, the part covering material was ordered removed and specifications for carbon steel castings substituted as recommended by the committee.

Other revisions pertained to specifications for carbon steel car axles, forgings, billets, tires, boiler tubes, boiler steel, steel structural shapes, carbon steel castings, springs, chain, bronze bearings, air-brake and signal hose, steam and hot water hose, rubber goods, etc.

Kaidanovsky Heads NRA Standards Unit

S. P. Kaidanovsky has been appointed to head the Standards Unit of the Research and Planning Division of the NRA. Before his affiliation with the NRA, for the last 12 years, Mr. Kaidanovsky was Electrical and Industrial Engineer at the Sharon (Pa.) plant of the Westinghouse Electric and Manufacturing Company.

Pacific Purchasor Has Symposium on Paint

A symposium on paint, with particular application to paints used on ships and on bridges, is published in *Pacific Purchasor*, February, 1935. Complete specifications used in buying paint for the San Francisco-Oakland Bay Bridge now under construction are given. Synthetic finishes for Automotive Equipment are also considered in the symposium. *Pacific Purchasor* is 20 cents a copy and can be obtained from the Purchasing Agents' Association of Northern California, 433 California Street, San Francisco.

Submit Proposed Standard Code For Pressure Piping to ASA

A proposed Code for Pressure Piping, developed by ASA sectional committee B31, sponsored by the American Society of Mechanical Engineers, has been submitted to the American Standards Association for approval as an American Tentative Standard.

The proposed Code consists of six sections: Power Piping Systems, Gas and Air Piping Systems, Oil Piping Systems, District Heating Piping Systems, Fabrication Details, and Materials, their Specifications and Identification.

Safety in Construction

American Recommended Practice for Safety in the Construction Industry (A10—1934)

This American Recommended Practice was developed to its present stage by practical men in the industry as represented in the Associated General Contractors of America. The ASA sectional committee on safety in the construction industry is now working on an expansion of this document into what will ultimately become an American Standard.

In the meantime, the present approved manual contains a large amount of useful and practical information covering safety in connection with the following subjects (which are section titles of the manual):

General
Employment
First Aid
Excavation
Explosives
Demolition
Hoists and Derricks
Concreting
Masonry
Equipment Upkeep
Form Work
Handling and Storage of Material
Scaffolding
Shoring
Hand Tools
Barricades
Boilers
Yards
Motor Trucks, Tractors and Teams
Railroad Tracks
Sub-Trades
Cleaning
Fire Hazards and Prevention
Structural
Tunnels
Railroad Construction
Waste Dump Tracks
Camp Sanitation and Housing
Compressed Air
Shaft Sinking
Locomotive and Tractor Cranes
Quarry
Road and Street Construction
Laying Gas Main
Temporary Electrical Installations
Electrical Equipment
Garages and Automobile Repair Shops
Respirators, Gas Masks, Hose Masks and Breathing Apparatus
Loading and Handling Vehicles
Conveyors
Protection of the Public
Clothing
Inspection

The price of this Safety Code is $2.00 per copy. It is a 296-page book, serviceably bound. ASA Company Members are allowed a 20% discount.

American Standards Association

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